Docket No.: 0941-0794P
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Chia-Chen CHEN et al.

Application No.: 10/623,646 | Confirmation No.: 4737

Filed: July 22, 2003 | Art Unit: 2628

For: METHOD OF RECONSTRUCTING A REGULAR 3D MODEL BY FEATURE-LINE SEGMENTATION | Examiner: S. A. Broome

PRE-APPEAL BRIEF REQUEST FOR REVIEW

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INTRODUCTORY COMMENTS

In response to the final Office Action mailed September 2, 2009, Appellants respectfully request a pre-appeal brief conference for review. This request is being filed concurrently with a Notice of Appeal.

This request includes: Remarks.

REMARKS

Appellants request withdrawal of the rejection of record is being clearly erroneous in fact and in law for the reasons set forth below.

Status of Claims

Claims 1, 2, 4-6 and 8 are pending in the application. Claims 1, 2, 4-6 and 8 stand rejected.

Grounds Of Rejection To Be Reviewed

The ground of rejection to be reviewed is the failure of claims 1, 2, 4-6 and 8 to be *prima facie* unpatentable over Lee, "Fast head modeling for animation" (hereinafter "Lee") in view of Migdal, U.S. Patent No. 6,208,347 (hereinafter "Lee") to support a rejection under 35 U.S.C. §103(a).

The Present Invention

The present invention pertains to a computer-implemented method of reconstructing a regular 3D model by feature-line segmentation. The claim scope of the present invention can be found in independent claims 1 and 5 and their dependent claims presented on pages 2-5 of the Reply dated May 20, 2009.

Distinctions Of The Invention Over The Applied Art

Lee

The Examiner alleged that Lee in Section 2.2.1 teaches the step of "drawing 3D feature-lines according to the original 3D model data and user requirements" as recited claims 1 and 5. However, Lee in Section 2.2.1 simply discloses that *the correspondence between control points on a generic model and feature points on pictures* is obtained, which is not synonymous with the feature of "drawing 3D feature-lines according to the original 3D model data and user requirements" as recited claims 1 and 5.

In addition, the Examiner alleged that Lee moves a few points to the corresponding position interactively, and anchors them to keep the structure of points when snakes are involved. Accordingly, the feature points are moved and anchored to corresponding position for later use. In addition, Lee teaches deforming (modifying) a generic model using the feature points. In other words, Lee simply discloses that the feature points are anchored (fixed) and the given generic model is deformed using these feature points. Lee nowhere teaches or suggests the reconstruction of a regular 3D model from an original 3D model as recited in claims 1 and 5. Unlike Lee, in the claimed invention as set forth in claims 1 and 5, the 3D feature-lines, the 3D threads, and the reconstructed 3D model reside in the same grid model surface, and the number of sample points is adjustable. These features are clearly absent from Lee.

The following comparison is provided to illustrate the difference between claim 1 and Lee.

Claim 1	corresponding figures	Lee
method of reconstructing a regular 3D model by feature-line segmentation		a method to reconstruct 3D facial model for animation from two orthogonal pictures
(a) inputting original 3D model data	Fig. 2: original 3D model	two orthogonal pictures taken from front and side views or from range data
(b) drawing 3D feature-lines according to the original 3D model data and user requirements	Fig. 3: 3D feature-lines	feature detection from 2D image data (orthogonal picture images or texture image for range data)
(c) converting the 3D feature-lines into continuing 3D threads, wherein the 3D threads are composed of connection joints, connection lines, and loops, wherein the connection joints are intersection points of the 3D feature-lines, the connection lines are the 3D feature-lines between two connection joints, and the loops are closed zones constructed by the connection lines	Fig. 4: 3D threads and sample points	No corresponding disclosure
(d) determining a number of sample points on each connection line, adding or deleting the loops from the user, and	Fig. 4: 3D threads and sample points	No corresponding disclosure

outputting the 3D threads		
(e) producing a regular triangular grid sample model according to the continuing 3D threads	Fig. 5B: regular triangular grid sample models	modifying a generic model with detected feature points to generate reconstructed 3D-face
(f) projecting the regular triangular grid sample model into the original 3D model to produce a reconstructed 3D model	Figs. 6A-6B : reconstructed 3D models	No corresponding disclosure
(g) redetermining the number of the sample points on each connection line, readding or redeleting the loops, and repeating steps (e) and (f) if the reconstructed 3D model does not satisfy resolution requirements from the user, and outputting the reconstructed 3D model if the reconstructed 3D model satisfies the resolution requirements	Figs. 7A-7B: reconstructed 3D models with different number of sample points	No corresponding disclosure
wherein the sample points for the reconstructed 3D model are located on the connection lines despite of the number of the sample points	Figs. 6A and 7A	No corresponding disclosure

Migdal

Migdal also fails to cure the deficiencies of Lee. In particular, Migdal teaches a system and method for modeling 3D objects and 2D images by wireframe mesh constructions having data points that combine both spatial data and surface information such as color or texture data. However, the mesh construction disclosed in Midgal has nothing to do with the feature lines of the claimed invention.

Unlike Migdal, in the claimed invention, the reconstruction of a regular 3D model is built from the feature lines in an original 3D model. In addition, the reconstructed 3D model is locked in the same position despite of resolution changes. This feature is advantageous, for various applications utilize position information of the reconstructed 3D model for further editing and/or setting control points. Migdal does not teach or suggest a locked-position reconstructed 3D model, and does not provide the described benefits of the claimed invention.

In addition, as shown in FIGs. 1, 2a and 2b of Migdal, the 6D data points (original data points) are input to the computer system 3 for reconstruction. Although Migdal in col. 22, lines

38-47 discloses that the 6D data points can be added or removed, those data points are the *original* data points, not the *sample points* from any lines.

In fact, Migdal nowhere discloses obtaining any connection lines as recited in claims 1 and 5. Migdal simply teaches using more or less *original* data points to change the resolution, but fails to teach obtaining any sample points from a non-existing line. Therefore, Migdal also fails to teach "determining a number of sample points on each connection line" as recited in claims 1 and 5, which the Examiner has also correctly acknowledged that Lee fails to teach.

Therefore, neither of the references utilized by the Examiner individually or in combination teaches or suggests the limitations of independent claims 1 and 5 or their dependent claims. Accordingly, the invention as recited in claims 1 and 5 and their dependent claims is patentable over the applied references, and the rejections should be withdrawn.

CONCLUSION

Withdrawal of the rejections is respectfully requested.

In the event there are any matters remaining in this application, the Examiner is invited to contact Cheng-Kang (Greg) Hsu, Registration No. 61,007 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 09/0461 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: November 30, 2009

Respectfully submitted,

Cheng-Kang Hsu
Reg. No. 61,007

By #61007

Paul C. Lewis
Registration No.: 43,368
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Appellants